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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,397	07/29/2003	Michael W. Price	SP02-174	7235
22928	7590	11/17/2005	EXAMINER	
CORNING INCORPORATED			NGUYEN, NGOC YEN M	
SP-TI-3-1			ART UNIT	
CORNING, NY 14831			PAPER NUMBER	
			1754	
DATE MAILED: 11/17/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/629,397

Applicant(s)

PRICE ET AL.

Examiner

Ngoc-Yen M. Nguyen

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 9-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### DETAILED ACTION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al (6,377,332) in view of Hammond et al (6,093,245).

Sakuma '332 discloses an optical member for photolithography comprising a calcium fluoride crystal exhibiting an internal transmittance of 99.5%/cm or greater with respect to light emitted from an F<sub>2</sub> laser (i.e. 157 nm) (note claim 1).

The difference is Sakuma '332 does not disclose the chlorine concentration in the fluoride crystal.

Hammond '245 discloses that highly pure crystal of alkali metal halide material is useful as optical elements (note column 1, lines 29-40). Hammond '245 further discloses that graphite has been used as a crucible material for growing calcium fluoride and barium fluoride. It has the desirable properties of being very resistant to corrosion by these inorganic crystal materials, being able to withstand the high temperature needed to melt the crystal material, and resulting in little contamination. Unfortunately however, graphite is porous. When it is used as a crucible material for alkali metal halide crystal growth, the melt leaks into and through the crucible, thus making such a

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crucible unsuitable for alkali metal halide crystal growth. In addition, surface of the graphite upon cooling, thereby preventing their ready removal from the crucible without damage to either the boule or the crucible (note column 2, lines 34-52).

Sakuma '332 discloses a crucible comprising a vessel of porous carbon having a wall with a thickness, an outer surface, and an inner surface; a surface depth region of at least the inner surface being impregnated with addition carbon to close open porosity at the surface (note claim 1). The porous carbon can be graphite (note claim 2) and the addition carbon can be graphitic pyrolytic carbon (note claim 3) or glassy carbon (note claim 4). The crucible can be used for growing calcium fluoride (note column 6, lines 28-32).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to maximize the purity of the calcium fluoride disclosed in Sakuma '332, as suggested by Hammond '245. Also, it would have obvious to one skilled in the art to use the crucible of Hammond '245 in the process of producing the calcium fluoride of Sakuma '332 because such crucible would permit release of the cooled crystal without remelting (note abstract), since graphite was not in contact with the crystal, any chloride impurity in the graphite would not migrate to the crystal itself.

Applicant's arguments filed July 25, 2005 have been fully considered but they are not persuasive.

Applicants urge that in the article by Bardsley and Green, it is generally believed that the scatter in  $\text{CaF}_2$  crystal is caused by calcium oxide, chlorine and sulfur can also

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cause scatter. The article indicates that chlorine and sulfur levels should be below 50 ppm and 20 ppm, respectively.

It should be noted that a copy of the article as mentioned by Applicants was not enclosed with Applicants' response. However, based on Applicants' statement regarding this article, the correlation between the amount of impurities, including chlorine impurity, in calcium fluoride crystal and the "scatter" effect of the crystal is known in the art. Thus, if the amount of the impurities, including chlorine impurity, in the calcium fluoride were too high, the transmission of the calcium fluoride at below 200 nm would not be as high as required in Applicants' claims. However, in Sakuma '332, the calcium fluoride is disclosed to have an internal transmittance of 99.5%/cm or greater with respect to light emitted from an F<sub>2</sub> laser (i.e. 157 nm) (note claim 1), thus, the amount of impurities in the calcium fluoride, including chlorine impurity, as disclosed in Sakuma '332 would inherently be low as required in Applicants' claims.

Applicants argue that Sakuma did not realize that chloride level in calcium fluoride was a source of scatter.

Even if Sakuma did not realize that chloride level in calcium fluoride was a source of scatter, the presence of chloride or chlorine in the calcium fluoride would still cause the scatter effect in the calcium fluoride crystal. Thus, when the transmittance of calcium fluoride of Sakuma '332 is the same as that of the claimed product, the calcium fluoride of Sakuma '332 is considered as "scatter-free" and it would inherently have low chlorine or chloride level. Applicants discovered a new property of a known product, i.e.

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the low chlorine level in calcium fluoride, does not render the product novel or unobvious.

Applicants argue that Hammond made no mention either using the technique for molten alkaline metal fluorides or whether it was necessary.

Hammond is applied to teach that in order to produce highly pure crystals, such as alkali metal material, which are used in optical application, a crucible as described in the above rejection is used in order to facilitate the removal of the crystals. Since the crystal product of Sakuma is also used in optical application and required to have high purity in order to reduce the scattering effect, it would have been obvious to one of ordinary skill in the art to use the crucible, as suggested in Hammond, to produce the crystal product of Sakuma.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

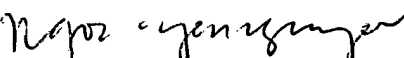
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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ngoc-Yen M. Nguyen whose telephone number is (571) 272-1356. The examiner is currently on Part time schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Stan Silverman can be reached on (571) 272-1358. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed (571) 272-1700.

  
Ngoc-Yen M. Nguyen  
Primary Examiner  
Art Unit 1754

nmn  
November 14, 2005